Listing of Claims:

1. (previously amended) An automatic vehicular exterior light control, comprising:

a controller configured to generate at least one exterior light control signal as a function of a classification network, said controller is further configured to execute a first algorithm comprising at least one second algorithm selected from the group comprising: an on state to off state transition state algorithm and an off state to on state transition state algorithm, wherein the classification network is trained using light sources classified using expert knowledge.

2. (original) An automatic vehicular exterior light control as in claim 1 wherein said classification network is selected from the group comprising: a neural network and a probability function.

3. (original) An automatic vehicular exterior light control as in claim 1 wherein said expert knowledge is selected from the group comprising: empirical data, experimental data, statistical data and manually classified data.

4. (previously amended) An automatic vehicular exterior light control, comprising:

a controller configured to generate at least one exterior light control signal as a function of a neural network analysis, wherein at least one output of said neural network comprises at least three states.

5. (original) An automatic vehicular exterior light control as in claim 4 wherein said neural network analysis comprises:

a plurality of inputs and a plurality of weights, at least one of which is associated with each input.

6. (previously amended) An automatic vehicular exterior light control as in claim 5 wherein at least one output is based upon at least one of the group comprising: the sum

of the inputs, the products of the inputs, the sum of the inputs with associated weighting factors and the products of the inputs with associated weighting factors.

7. (original) An automatic vehicular exterior light control as in claim 4 wherein said neural network analysis further comprises:

at least one hidden layer node; and

at least one weighting factor, wherein each hidden layer node is associated with at least one weighting factor.

8. (original) An automatic vehicular exterior light control as in claim 7 wherein the value of each hidden layer node is based upon the product of at least one or more input and at least one weighting factor associated with each input.

9. (previously amended) An automatic vehicular exterior light control as in claim 8 wherein said exterior light control signal is based upon the product of at least one hidden layer node and at least one hidden layer weighting factor.

10. (currently amended) An automatic vehicular exterior light control as in claim 4 further comprising at least one input variable wherein said at least one input variable is selected from [the]a group of light source characteristics comprising: peak brightness, total brightness, centroid location, gradient, width, height, color, x-direction motion, y-direction motion, brightness change, age, average x-direction motion, average y-direction motion, motion jitter, a change in brightness that correlates to a change in brightness of an exterior light of a controlled vehicle and average brightness change.

11. (currently amended) An automatic vehicular exterior light control as in claim 4 further comprising at least one input variable wherein said at least one input variable is selected from [the]a group of controlled vehicle associated operating parameters comprising: vehicle speed, ambient light level, vehicle turn rate, lane tracking, vehicle pitch, vehicle yaw, geographic location and road type.

12. (original) An automatic vehicular exterior light control as in claim 11 wherein said vehicle turn rate is determined via at least one of the items selected from the group comprising: steering wheel angle, a compass, wheel speed, GPS and image analysis results.

13. (original) An automatic vehicular exterior light control as in claim 4 wherein said neural network further comprising at least one output selected from the group comprising: a Boolean true-false value and a substantially continuous value indicative of a probability.

14. (original) An automatic vehicular exterior light control as in claim 4 wherein said controller is further configured to determine whether at least one light source is either a headlight of an oncoming vehicle, a taillight of a leading vehicle or a non-vehicular light source as a function of said neural network analysis.

15. (original) An automatic vehicular exterior light control as in claim 14 wherein said determination is further a function of the brightness of the light source.

16. (original) An automatic vehicular exterior light control as in claim 14 wherein said determination is further a function of any AC flicker that may be present in the light source.

17. (original) An automatic vehicular exterior light control as in claim 4 wherein said neural network is trained utilizing empirical data.

18. (original) An automatic vehicular exterior light control as in claim 17 wherein said empirical data is obtained by analyzing at least one image comprising known light sources.

19. (original) An automatic vehicular exterior light control as in claim 4 comprising twenty three input variables.

20. (previously amended) An automatic vehicular exterior light control, comprising:

a controller configured to generate at least one exterior light control signal as a function of at least one probability function, wherein said at least one probability function comprises a plurality of variables and a substantially continuous output value having at least three states indicative of a probability.

21. (original) An automatic vehicular exterior light control as in claim 20 wherein said variables are selected from the group of light source characteristics comprising: peak brightness, total brightness, centroid location, gradient, width, height, color, x-direction motion, y-direction motion, brightness change, age, average x-direction motion, average y-direction motion, motion jitter, a change in brightness that correlates to a change in brightness of an exterior light of a controlled vehicle and average brightness change.

22. (original) An automatic vehicular exterior light control as in claim 20 wherein said variables are selected from the group of controlled vehicle associated operating parameters comprising: vehicle speed, ambient light level, vehicle turn rate, lane tracking, vehicle pitch, vehicle yaw, geographic location and road type.

23. (original) An automatic vehicular exterior light control as in claim 22 wherein said vehicle turn rate is determined via at least one of the items selected from the group comprising: steering wheel angle, a compass, wheel speed, GPS and image analysis results.

24. (original) An automatic vehicular exterior light control as in claim 20 wherein said controller is further configured to determine whether at least one light source is either a headlight of an oncoming vehicle, a taillight of a leading vehicle or a non-vehicular light source as a function of said probability function.

25. (original) An automatic vehicular exterior light control as in claim 24 wherein said determination is further a function of the brightness of the light source.

26. (original) An automatic vehicular exterior light control as in claim 24 wherein said determination is further a function of any AC flicker that may be present in the light source.

27. (original) An automatic vehicular exterior light control as in claim 20 wherein said probability function is selected from the group comprising: a first order equation, a second order equation, a third order equation and a fourth order equation.

28. (previously amended) An automatic vehicular exterior light control, comprising:

a controller configured to generate at least one exterior light control signal as a function of at least one probability function, wherein said at least one probability function comprises a plurality of variables, a plurality of weighting factors and an output, wherein said output comprises at least three states.

29. (original) An automatic vehicular exterior light control as in claim 28 wherein said variables are selected from the group of light source characteristics comprising: peak brightness, total brightness, centroid location, gradient, width, height, color, x-direction motion, y-direction motion, brightness change, age, average x-direction motion, average y-direction motion, motion jitter, a change in brightness that correlates to a change in brightness of an exterior light of a controlled vehicle and average brightness change.

30. (original) An automatic vehicular exterior light control as in claim 28 wherein said variables are selected from the group of controlled vehicle associated operating parameters comprising: vehicle speed, ambient light level, vehicle turn rate, lane tracking, vehicle pitch, vehicle yaw, geographic location and road type.

31. (original) An automatic vehicular exterior light control as in claim 30 wherein said vehicle turn rate is determined via at least one of the items selected from the group comprising: steering wheel angle, a compass, wheel speed, GPS and image analysis results.

32. (original) An automatic vehicular exterior light control as in claim 31 wherein said controller is further configured to determine whether at least one light source is either a headlight of an oncoming vehicle, a taillight of a leading vehicle or a non-vehicular light source as a function of said probability function.

33. (original) An automatic vehicular exterior light control as in claim 32 wherein said determination is further a function of the brightness of the light source.

34. (original) An automatic vehicular exterior light control as in claim 32 wherein said determination is further a function of any AC flicker that may be present in the light source.

35. (original) An automatic vehicular exterior light control as in claim 28 wherein said at least one output is selected from the group comprising: a Boolean true-false value and a substantially continuous value indicative of a probability.

36. (original) An automatic vehicular exterior light control as in claim 28 wherein said weighting factors are determined experimentally by examining at least one image containing at least one known light source.

37. (original) An automatic vehicular exterior light control as in claim 28 wherein said weighting factors are determined by examining statistical data.

38. (original) An automatic vehicular exterior light control as in claim 37 wherein said statistical data is derived from a plurality of images containing known light sources.

39. (original) An automatic vehicular exterior light control as in claim 28 wherein said probability function is selected from the group comprising: a first order equation, a second order equation, a third order equation and a fourth order equation.

40. (previously amended) An automatic vehicular exterior light control, comprising:

a controller configured to generate an exterior light control signal, said controller is further configured to execute a first algorithm comprising at least one second algorithm selected from the group comprising: an on state to off state transition state algorithm and an off state to on state transition state algorithm.

41. (previously amended) An automatic vehicular exterior light control as in claim 40 wherein said off state to on state transition state is entered when at least one of the conditions is satisfied selected from the group comprising: scene free of headlamps and tail lamps with brightness above a threshold, less than threshold number of AC lights in image, less than threshold number of lights in the image, threshold number of continuous clear cycles reached, controlled vehicle speed above threshold, controlled vehicle steering wheel angle magnitude below threshold value, HOLD timer elapsed, INACTIVITY timer elapsed, TAILLAMP OVERTAKE timer, FOG condition clear, RAIN condition clear, street lamp density below threshold and traffic density delay.

42. (previously amended) An automatic vehicular exterior light control as in claim 40 wherein said on state to off state transition state is entered when at least one light source is detected.

43. (original) An automatic vehicular exterior light control as in claim 40 wherein at least one of said transition states comprises a series of levels and movement between levels is a function of at least one of the variables selected from the group comprising: light source brightness, light source position, confidence of classification, light source type, controlled vehicle speed, and controlled vehicle turn rate.

44. (previously amended) An automatic vehicular exterior light control comprising a method of classifying detected light sources, said method comprising the steps of:

classifying at least one detected light source with a classification network, wherein an output of said classification network is a likelihood that said detected light source is a headlamp of an oncoming vehicle or a tail lamp of a leading vehicle, wherein said output comprises at least three states.

45. (original) The method of claim 44 further comprising the step of:

determining the control state of at least one exterior light of the controlled vehicle based upon said output of said classification network.

46. (original) The method of claim 44 wherein said classification network is selected from the group comprising: a neural network and a probability function.

47. (previously amended) An automatic vehicular exterior light control comprising a method of classifying detected light sources, said method comprising the steps of:

classifying at least one detected light source with a classification network, wherein said classification network determines the type of light source detected based upon at least one characteristic of at least one previously classified light source verified to be accurately classified by examining statistical data, wherein said statistical data is derived from a plurality of images containing known light sources.

48. (original) The method of claim 47 further comprising the step of:

determining the control state of at least one exterior light of the controlled vehicle based upon an output of the classification network.

49. (original) The method of claim 47 wherein said classification network is selected from the group comprising: a neural network and a probability function.

50. (previously amended) An automatic vehicular exterior light control comprising a method of classifying detected light sources, said method comprising the steps of:

classifying at least one detected light source with a trainable classification network, wherein said classification network is trained using at least one light source classified using expert knowledge by examining statistical data, wherein said statistical data is derived from a plurality of images containing known light sources.

51. (original) The method of claim 50 wherein said expert knowledge is selected from the group comprising: empirical data, experimental data, statistical data and manually classified data.

52. (original) The method of claim 50 wherein said classification network is selected from the group comprising: a neural network and a probability function.

53. (original) The method of claim 50 further comprising the step of:

determining the control state of at least one exterior light of the control vehicle based upon an output of said classification network.

54. cancelled

55. cancelled

56. cancelled

57. cancelled

58. cancelled

59. cancelled

60. cancelled

61. cancelled

62. cancelled

63. cancelled

64. (previously amended) An automatic vehicular exterior light control, comprising:

a controller configured to detect a clear condition when no other lights of other vehicles are detected within a range, wherein automatic activation of head lamps is inhibited by one or more events of the group comprising: threshold number of streetlights exceeded, threshold number of streetlights per area exceeded, steering wheel angle magnitude threshold exceeded.

65. (previously pending) An automatic vehicular exterior light control, comprising:

a controller configured to generate at least one exterior light control signal as a function of a classification network comprising at least one weighting factor established by examining statistical data, wherein said statistical data is derived from a plurality of images containing known light sources.

66. (previously pending) An automatic vehicular exterior light control as in claim 65 wherein said classification network analysis comprises:

a plurality of inputs and a plurality of weighting factors at least one of which is associated with each input.

67. (previously pending) An automatic vehicular exterior light control as in claim 66 further comprising at least one output, wherein said at least one output is based upon at least one of the group comprising: the sum of the inputs, the products of the inputs, the

sum of the inputs with associated weighting factors and the products of the inputs with associated weighting factors.

68. (previously pending) An automatic vehicular exterior light control as in claim 65 wherein said classification network analysis further comprises:

at least one hidden layer node, wherein each hidden layer node is associated with at least one weighting factor.

69. (previously pending) An automatic vehicular exterior light control, comprising:

a controller configured to generate at least one exterior light control signal as a function of at least one classification network, wherein said at least one classification network comprises at least one weighting factor established by examining statistical data, wherein said statistical data is derived from a plurality of images containing known light sources and a substantially continuous output value indicative of a probability.

70. (previously pending) An automatic vehicular exterior light control as in claim 69 further comprising inputs selected from the group of light source characteristics comprising: peak brightness, total brightness, centroid location, gradient, width, height, color, x-direction motion, y-direction motion, brightness change, age, average x-direction motion, average y-direction motion, motion jitter, a change in brightness that correlates to a change in brightness of an exterior light of a controlled vehicle and average brightness change.

71. (previously pending) An automatic vehicular exterior light control, comprising:

a controller configured to generate at least one exterior light control signal as a function of at least one classification network, wherein said at least one classification network comprises at least one variable, at least one weighting factor established by examining statistical data wherein said statistical data is derived from a plurality of images containing known light sources and at least one output.

72. (previously pending) An automatic vehicular exterior light control as in claim 71 wherein said at least one variable is selected from the group of light source characteristics comprising: peak brightness, total brightness, centroid location, gradient, width, height, color, x-direction motion, y-direction motion, brightness change, age, average x-direction motion, average y-direction motion, motion jitter, a change in brightness that correlates to a change in brightness of an exterior light of a controlled vehicle and average brightness change.

73. (previously pending) An automatic vehicular exterior light control as in claim 71 wherein said at least one variable is selected from the group of controlled vehicle associated operating parameters comprising: vehicle speed, ambient light level, vehicle turn rate, lane tracking, vehicle pitch, vehicle yaw, geographic location and road type.

74. (previously pending) An automatic vehicular exterior light control comprising a method of classifying detected light sources, said method comprising the steps of:

classifying at least one detected light source with a classification network, wherein an output of said classification network is a likelihood that said detected light source is a headlamp of an oncoming vehicle or a tail lamp of a leading vehicle wherein said classification network comprises at least one weighting factor established by examining statistical data, wherein said statistical data is derived from a plurality of images containing known light sources.